

C μ L9960

DECIMAL DECODER/DRIVER

COUNTING MICROLOGIC® INTEGRATED CIRCUIT

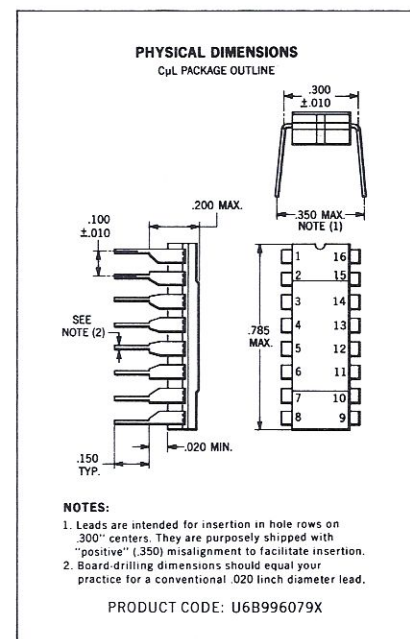
GENERAL DESCRIPTION — The C μ L 9960 Decoder/Driver is a monolithic silicon circuit which accepts 1-2-4-8 binary coded decimal inputs at integrated circuit signal levels and produces ten mutually exclusive outputs which can directly control the ionizing potentials of many gas filled cold cathode indicator tubes. The C μ L 9960 is designed specifically for use with the C μ L 9958 Decade Counter or C μ L 9959 Buffer-Storage, but can be used with other integrated circuit types. Only true values are required as inputs thereby simplifying the connection with counters or other information sources.

RULES FOR USE OF C μ L 9960

The principal intended use of the C μ L 9960 is with industrial and ground support systems, from 0°C to +75°C ambient, and with operating V_{CC} from 3.3 to 5.5 volts. The lower limit of the temperature range may be extended to -55°C by raising the minimum V_{CC} to 4.0 volts.

ABSOLUTE MAXIMUM RATINGS (Note 1)

	Storage Temperature	-55°C to +125°C
	Operating Temperature	0°C to +75°C
	Supply Voltage (0°C to +75°C)	6 V
	Input Voltage	+4 V, -2 V
I _{OL}	Current into each Output Terminal (In the ON State)	15 mA
I _{OH}	Current into each Output Terminal (In the OFF State) (Notes 2 and 3)	0.6 mA



ELECTRICAL CHARACTERISTICS (25°C Free Air Temperature unless otherwise noted)

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Conditions
V _{CC}	Power Supply (Note 4)	3.3		5.5	V	
P _b	Power Consumption		45		mW	V _{CC} = 4.0 V Input High
V _{IH}	Input High	1.0			V	
V _{IL}	Input Low			0.4	V	
V _{OL}	ON Output Voltage (Note 2)			4.0	V	V _{IH} = 1.0 V, I _{OL} = 3 mA
V _{OH}	OFF Output Voltage	55			V	I _{OH} = 0.2 mA
I _{CO}	OFF Output Leakage Current			50	μA	V _{OUT} = 0.2 mA

NOTES:

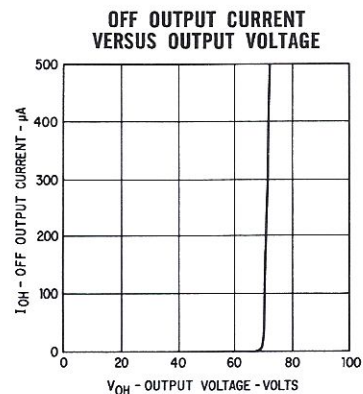
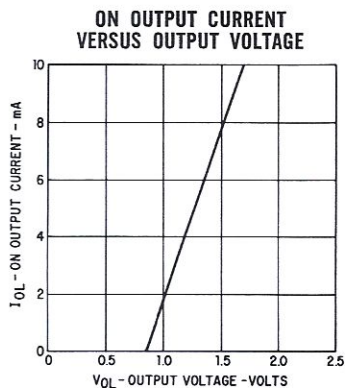
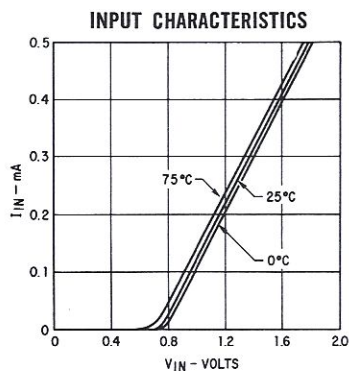
- (1) These ratings are limiting values above which serviceability of unit may be impaired.
- (2) Outputs in the OFF state Must not be left floating, they should be tied to V_{CC} through 10kΩ if they are not connected to the cathodes of a readout tube.
- (3) Total current through all 9 outputs in the OFF state must not exceed 1.5 mA.
- (4) For operation using gas filled readout tubes requiring 6 to 10mA ON current, V_{CC} Min. = 4.0 V.

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FAIRCHILD COUNTING MICROLOGIC® INTEGRATED CIRCUIT — C_μL9960

TYPICAL ELECTRICAL CHARACTERISTICS



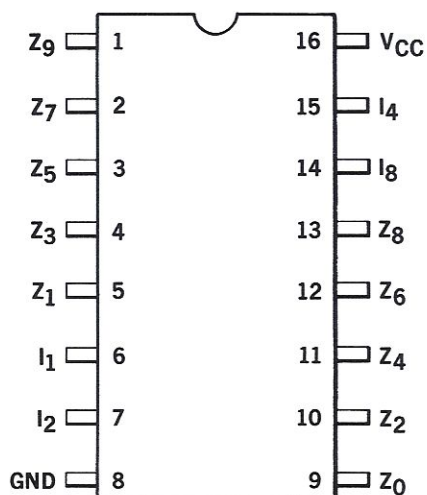
TRUTH TABLE

With the coding shown in the table only one of the outputs will be low or On at any time.

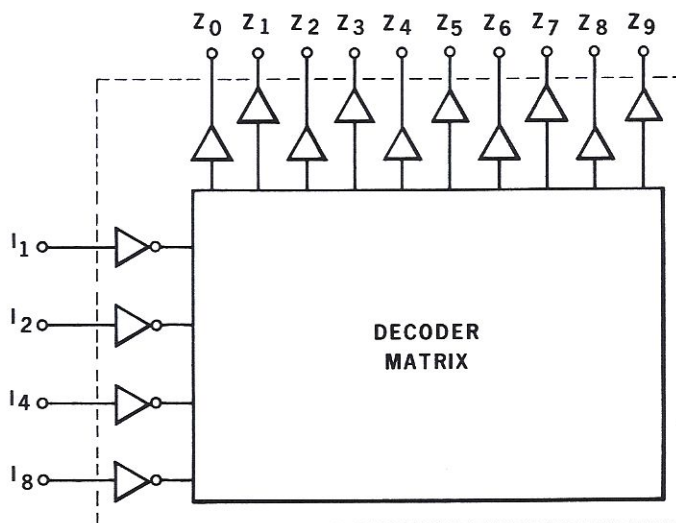
I_1	H	L	H	L	H	L	H	L	H	L
I_2	H	H	L	L	H	H	L	L	H	H
I_4	H	H	H	H	L	L	L	L	H	H
I_8	H	H	H	H	H	H	H	H	L	L
ON Output	Z_0	Z_1	Z_2	Z_3	Z_4	Z_5	Z_6	Z_7	Z_8	Z_9

L = Low
H = High

16 PIN DUAL IN-LINE PACKAGE
(Top View)

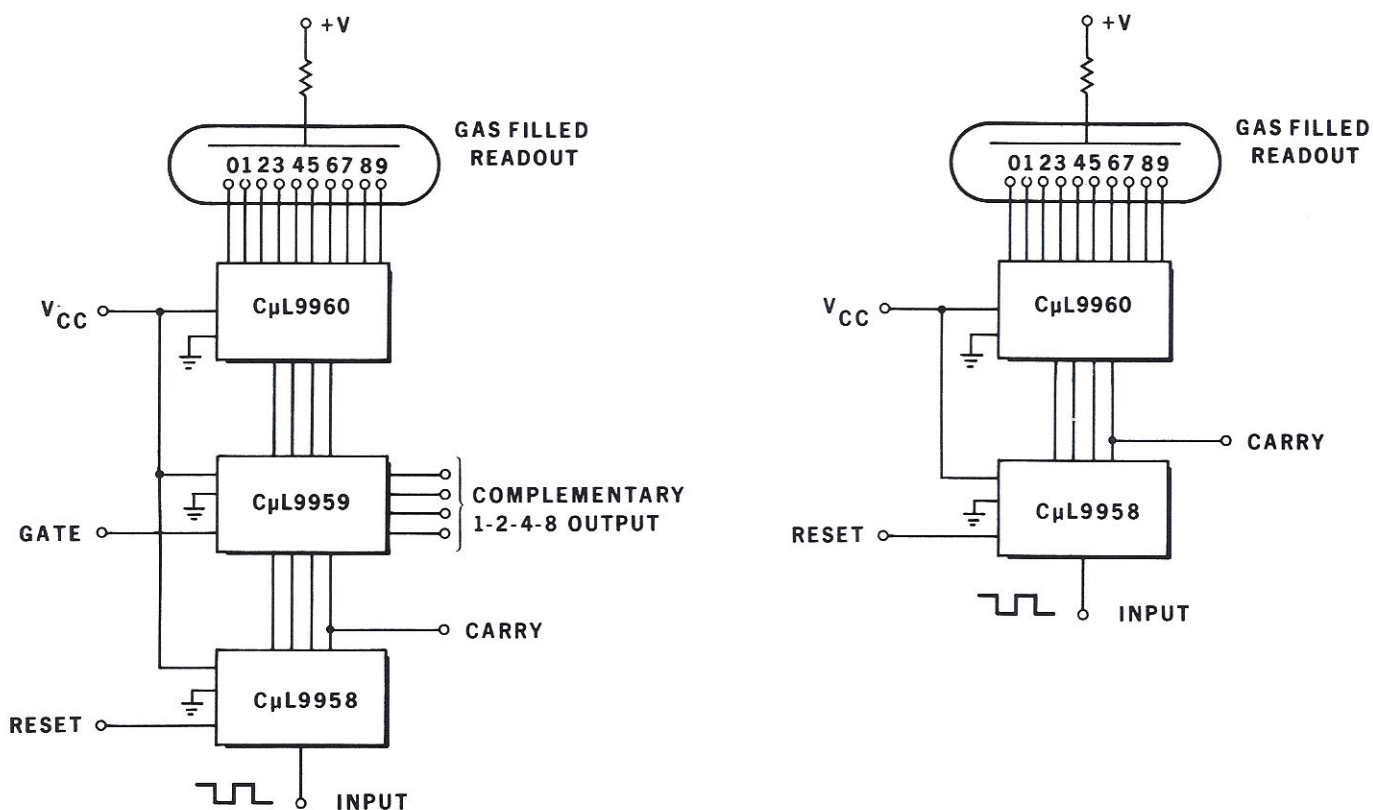


BLOCK DIAGRAM



FAIRCHILD COUNTING MICROLOGIC® INTEGRATED CIRCUIT — C μ L9960

TYPICAL APPLICATIONS



* The C μ L9960 is suitable for driving all commercial available numeric gas filled readout tubes in which ON Cathode current does not exceed 10mA and total OFF Cathode leakages do not exceed 1.5mA. The Values of +V and R may be chosen following the readout tube manufacturers' specifications.

LOADING RULES FOR C μ L9960

Driving Device	At V _{cc} of	
C μ L9959	3.3 to 5.5 V	2 C μ L9960 inputs
C μ L9958	3.3 to 5.5 V	1 C μ L9960 plus 1 C μ L9958 Count Input
Industrial Range Milliwatt RTL	3.6 V $\pm$ 10%	1 C μ L9960
Industrial Range RTL	3.6 $\pm$ 10%	6 C μ L9960
Industrial Range DT μ L 6K Family	4.5 V Min.	1 C μ L9960
Industrial Range DT μ L 2K Family	4.5 V Min.	3 C μ L9960

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